

SWA 0449731

ABSTRACT

<sup>A</sup>  
~~The present invention provides~~ a printer that enables  
required data, such as a remaining quantity of each ink, to be  
written securely even when a storage device having a relatively  
5 low allowable frequency of rewriting is applied for a storage  
element mounted on an ink cartridge. ~~The present invention also~~  
<sup>AN</sup>  
~~provides an~~ ink cartridge that is detachably attached to the printer.  
In the printer ~~of the present invention~~, a sequential access-type  
EEPROM having a relatively low allowable frequency of rewriting  
10 is applied for storage elements incorporated in both a black ink  
cartridge and a color ink cartridge. A print controller in the  
printer has a memory, for which an EEPROM (or a DRAM) is applicable.  
Data relating to each ink cartridge, such as a remaining quantity  
of each ink in the ink cartridge, are stored into both the EEPROM  
15 of the print controller and a memory cell included in the storage  
element of the ink cartridge. The writing operation of data into  
the EEPROM of the print controller is carried out at every time  
the remaining quantity of each ink is calculated, whereas the  
writing operation into the memory cell in the storage element of  
20 the ink cartridge is carried out restrictedly in response to a power  
down instruction. This arrangement causes the frequency of  
writing into the storage element of the ink cartridge to be lower  
than the frequency of writing into the EEPROM of the print  
controller. This accordingly fulfills the requirements, that is,  
25 the sufficient reliability of data and the restriction of the  
allowable frequency of rewriting.